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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|------------------|
| 10/725,774 | 12/02/2003 | Todd M. Rossi | FDS-P7.2-US | 3845 |
| 21616 | 7590 | 03/08/2005 | EXAMINER | |
| LAW OFFICES OF MARK A. GARZIA, P.C. 2058 CHICHESTER AVE BOOTHWYN, PA 19061 | | | BARBEE, MANUEL L | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2857 | |

DATE MAILED: 03/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|--|-------------------------------|------------------------------|--|
| <p align="center">Office Action Summary</p> | Application No. 10/725,774 | Applicant(s) ROSSI ET AL. | |
| | Examiner Manuel L. Barbee | Art Unit 2857 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 December 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8, 11-14 and 16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8, 11-14 and 16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>12/30/04</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claim 11 is objected to because of the following informalities: In claim 11, lines 6-9 of the claim contain limitations for "said calculating step". The first mention of a calculating occurs at line 10 of the claim and it appears that the "said calculating step" at line 6 refers to the calculating step starting at line 10 and therefor the limitations for "said calculating step" should follow the limitations for calculating that are presently found at lines 10 and 11. Appropriate correction is required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1 and 2 are rejected under 35 U.S.C. 102(b) as being anticipated by Jones et al. (US Patent No. 5,596,507).

With regard to measuring five parameters associated with a refrigeration system, as shown in claim 1, Jones et al. teach measuring a dozen temperatures (Abstract). With regard to detecting faults based on the measured parameters, as shown in claim 1, Jones et al. teach a computer that identifies trouble spots and produces graphs, tables and prediction commentary (Abstract). With regard to assigning a level to the measurement parameters based on the relationship between performance parameters and operating range values, as shown in claim 1, Jones et al. teach fault trigger

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conditions (FTC) which are assigned when a measured parameter or a parameter calculated from a measured parameter exceeds a threshold (col. 5, line 1 - col. 6, line 12; Table I; col. 4, lines 47-67).

With regard to a data collection unit that has means for providing power, a first microprocessor, a memory, five sensors, and a data port for assisting in communication with the calculating means, as shown in claim 2, Jones et al. teach a computer that would inherently require power and memory, temperature sensors and a sensor lead port connecting to the computer (col. 3, line 48 - col. 4, line 22; computer 82, sensor lead port 72).

4. Claims 11, 12 and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Proctor et al. (US Patent No. 4,967,567).

With regard to storing a plurality of HVAC system parameters, as shown in claim 11, Proctor et al. teach storing input data for an automobile air conditioning system (col. 2, line 49 - col. 3, line 6). With regard to defining a diagnostic instructions, measuring five but not more than nine system variables and comparing calculated operational variables with stored variables and conveying at least one diagnostic message, as shown in claim 11, Proctor et al. teach measuring pressures and temperatures and comparing the measured variables to stored variables to determine whether the parameters are out of range (col. 3, line 7-56). With regard to assigning a level to each variable based on the relationship between performance parameters and operating range values, as shown in claim 11, Proctor et al. teach determining whether measured

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parameters are under, over or within acceptable ranges of values (col. 17, line 32 - col. 20, line 36).

With regard to the at least five measurements including three temperatures and two pressure measurements including liquid line pressure and suction line pressure, as shown in claims 12 and 14, Proctor et al. teach measuring discharge pressure, suction line pressure, ambient temperature, inlet air temperature, and discharge air temperature (col. 14, lines 8-31).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 3-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jones et al. in view of Jayanth (US Patent No. 6,324,854).

Jones et al. teach all the limitations of claims 1 and 2 upon which claims 3-8 depend. Further, with regard to measuring three temperatures including liquid line, outdoor atmospheric and suction line temperature, as shown in claims 3 and 4, Jones et al. teach measuring suction line, liquid line and ambient air temperature (col. 2, line 65 - col. 3, line 35). Jones et al. do not teach measuring two pressures including liquid line refrigerant pressure and suction line refrigerant pressure, as shown in claims 3 and 4. Jayanth teach measuring pressure near the suction port and the discharge port (col. 3, lines 43-60). It would have been obvious to one of ordinary skill in the art at the time the

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invention was made to modify the apparatus for predictive maintenance of HVACR systems, as taught by Jones et al., to include measuring two pressures, as taught by Jayanth, because then more monitored parameters would have increased the diagnostic capability (Jayanth, col. 2, lines 8-33).

Jones et al. do not teach that the power providing means comprises a battery, as shown in claim 5, or that the calculating means has a second microprocessor, as second memory and a second data port, as shown in claim 6. Jones et al. do not teach passing data with RS232 specifications, as shown in claim 7, or that the calculating means is a hand-held computer, as shown in claim 8. Jayanth teaches a hand held computer for diagnosis, which would inherently include a battery for power (Figure 3, computer 34). Jayanth teach a data acquisition system with a microcontroller in addition to the hand held computer and both computers would have memory and data ports for communication (Figure 3). The Examiner takes official notice that communication using RS232 specifications is well known.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the apparatus for predictive maintenance of HVACR system, as taught by Jones et al., to include a handheld computer for calculation, as taught by Jayanth, because then need for each system to have independent sensors and electronics would have been eliminated (col. 2, lines 34-60). It would further have been obvious to one of ordinary skill in the art at the time the invention was made to modify the apparatus for predictive maintenance of HVACR systems, as taught by Jones et al., to include a separate handheld computer in communication with the data

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acquisition system, as taught by Jayanth, because then it would have been possible to change sensors without changing the handheld computer used for diagnosis. It would further have been obvious to one of ordinary skill in the art at the time the invention was made to modify the apparatus for predictive maintenance of HVACR systems, as taught by Jones et al., to include using RS232 for communication, because then a well known protocol would have allowed communication with many computers.

7. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Proctor et al. in view of Jones et al.

Proctor et al. teach all the limitations of claims 11 and 12 upon which claim 13 depends. Proctor et al. do not teach that the three temperature measurements are suction line, liquid line and outdoor atmospheric temperature. Jones et al. teach measuring suction line, liquid line and ambient air temperature (col. 2, line 65 - col. 3, line 35). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the air conditioner diagnosis system, as taught by Proctor et al., to measure the temperatures, as taught by Jones et al, because then preventive maintenance would have been more effective (Jones et al., col. 1, lines 6-25).

8. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Proctor et al. in view of Murray et al. (US Patent No. 4,798,055).

Proctor et al. teach all the limitations of claim 11 upon which claim 15 depends. Proctor et al. do not teach that the levels assigned are "LOW", "BELOW GOAL", "ABOVE GOAL", and "HIGH", as shown in claim 16. Murray teach assigning levels to superheat including extra high, high, low and super low and normal (col. 8, line 35 - col.

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9, line 29; Figs. 7H, 7K, 7M, 7N). Normal superheat would be equivalent to goal. Extra high superheat would be equivalent to HIGH. High superheat would be equivalent to above goal. Similar correlation can be drawn for below goal and low. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the air conditioner diagnosis system, as taught by Proctor et al., to include classifying a parameter over five levels, as taught by Murray et al., because then automatic diagnosis would have been facilitated (Murray et al., col. 1, lines 16-68).

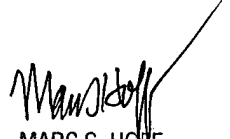
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Manuel L. Barbee whose telephone number is 571-272-2212. The examiner can normally be reached on Monday-Friday from 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marc S. Hoff can be reached on 571-272-2216. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 872-9306 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-0976.

mlb
March 1, 2005


MARC S. HOFF
SUPERVISORY PATENT EXAMINER
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